DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 13.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-012945
Date Inspected: 02-Apr-2010

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Oregon Iron Works Clackamas, Or.

OSM Arrival Time: 1000
OSM Departure Time: 1830
Location: Clackamas, OR

CWI Name:	M. Gregson, J. Salazar			**CWI Present:**	☑ Yes	☐ No		
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☐ Yes	☐ No	☑ N/A	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A	
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A	
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A	
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A	

Bridge No: 34-0006
Component: Hinge K Pipe Beams

Summary of Items Observed:

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

Hinge-K Pipe Beam Assembly 101A-1:

The QA Inspector noted that QC Inspector Jose' Salazar had completed the Visual and Magnetic Particle Testing (VT/MT) on the Weld Joint #WM4-1, Fuse 120A-1 to Forging 102A-1. The QA Inspector reviewed the completed testing report and noted that QC Inspector Salazar had performed the testing on the interior and exterior portion of the weld joint and had found no rejectable indications. The QA Inspector then performed approximately 10 % Visual and Magnetic Particle Testing on the WJ #WM4-1 and found no rejectable indications. The QA Inspector notified Lead QC Inspector Mike Gregson of the testing results and completed the applicable Magnetic Particle Testing Report (TL6028).

The QA Inspector was informed by Lead QC Inspector Mike Gregson that he had performed 100 % Ultrasonic Testing (UT), on the Face "B", the interior Forging side of the Weld Joint #WM4-1. The QA Inspector noted that this Complete Joint Penetration (CJP), AWS D1.5 B-U7-S weld joint is the Fuse 120A-1 to Forging 102A-1. QC Inspector Gregson explained that he had performed the testing per OIW approved procedure #NP-2244-(13)-01 and found no rejectable or recordable indications, during the testing. QC Inspector Gregson explained that he had performed the testing with a 70 degree angle, attached to a 2.25 MHz transducer and that the testing was now complete and acceptable, on the entire weld joint, including both non-critical weld repairs. The QA Inspector then performed approximately 10% Ultrasonic Testing on WJ #WM4-1, Fuse 120A-1 to Forging 102A-1. The QA

Inspector performed the testing on Face “A”, the Fuse side and on Face “B”, both sides of the weld axis and found no rejectable or recordable indications. The QA Inspector then performed 100% UT testing on the two completed non-critical weld repairs and found one recordable indication. The QA Inspector determined that this indication rating was a +2, Class “B”, per AWS D1.5 Tension testing criteria, with a length of 15.8 mm (.625”). The QA Inspector then informed QC Inspector Gregson of the testing results and explained that per AWS D1.5, Sect. 6.19. 8, “Only those discontinuities which are rejectable need be recorded on the test report, except that for welds designated in the contract documents as being “Fracture Critical,” ratings which are up to and including 6 dB less critical than rejectability, shall be recorded on the test report”. QC Inspector Gregson then explained that he will perform a calibration and re-check the area that the QA Inspector had marked as a “recordable” indication. The QA Inspector then witnessed QC Inspector Gregson perform the testing and Mr. Gregson confirmed that the indication was present and “recordable”. QC Inspector Gregson explained that he could verify a +5 indication rating “Class C”, with a length of .625” that he will include this recordable indication in his final UT report. QC Inspector Gregson explained that he will instruct QC Inspector Rob Walters to also verify the indication, on 4/5/10. See attached picture and completed testing report (TL6027), for additional details.

Hinge-K Pipe Beam Assembly 120A-2:
The QA Inspector was informed by QC Inspector Jose’ Salazar that WID #F17 (Igor Frolov), was in-process of performing electro slag welding (ESW) on an additional overlay welding pass. The QA Inspector noted that this Fuse had previously been at AG Machine Works and OIW had instructed AG to machine pass the required tolerance, due to slag inclusions discovered in the overlay, during final machining.
QC Inspector Salazar explained that he had recorded in-process welding parameters of 1150 amps and 25.7 volts, with a minimum pre-heat temperature of 150 degrees Fahrenheit. QC Inspector Salazar explained that he had previously recorded a travel speed of 10.5 inches per minute (i.p.m.) The QA Inspector randomly verified a pre-heat temperature of approximately 150 degrees Fahrenheit and witnessed WID #F17 performing the ESW in the flat position, utilizing the Submerged Arc Welding (SAW) process and Soudotape 316L stainless steel consumable strip. WID #F17 explained to the QA Inspector that he was currently utilizing OIW approved Welding Procedure Specification (WPS) 7003. The QA Inspector noted that WID #F17 appeared to be in compliance with AWS D1.5 and WPS 7003.

Material, Equipment, and Labor Tracking (MELT)
QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project. The QA Inspector observed at Oregon Iron Works: 4 OIW production personnel and 2 QC Inspectors on day shift. The QA Inspector noted that the following personell were present at AG Machine shop: 1 Machinist and 1 Machinist supervisor.

WELDING INSPECTION REPORT

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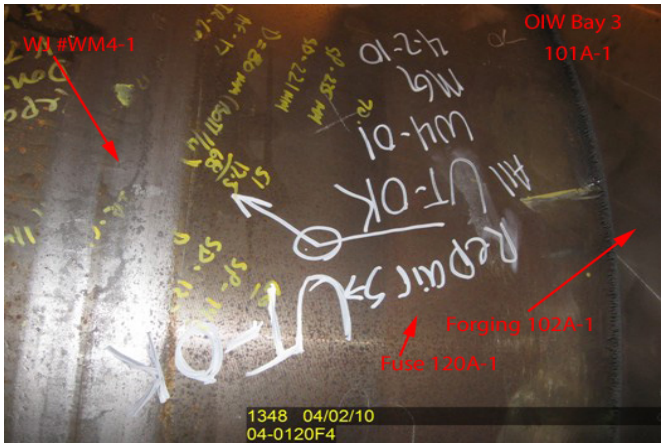

Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By:	Vance,Sean	Quality Assurance Inspector
Reviewed By:	Adame,Joe	QA Reviewer